

CLAIMS

What is claimed is:

1. A laser diode driving circuit comprising:
a laser diode driving unit which outputs a laser diode driving current; and
a laser diode protection unit which sets a limit of the laser diode driving current output from the laser diode driving unit and increases the limit of the laser diode driving current as an ambient temperature of a laser diode increases.
2. The laser diode driving circuit of claim 1, wherein the laser diode protection unit includes a thermistor, coupled to an emitter and a base of a first transistor, that limits the maximum driving current output by the laser diode driving unit.
3. The laser diode driving circuit of claim 2, wherein the laser diode driving unit includes a second transistor that outputs a driving current to the laser diode when the second transistor is turned on.
4. The laser diode driving circuit of claim 3, wherein a collector of the first transistor is coupled to a base of the second transistor and operates to turn off the second transistor when the first transistor is on.
5. The laser diode driving circuit of claim 2, wherein the thermistor has a negative temperature coefficient so as to have a decreasing resistance as the ambient temperature increases.
6. A laser diode driving circuit comprising:
a first transistor which outputs a laser diode driving current;
a second transistor which is turned on and turns off the first transistor when a current flowing through a node of the first transistor reaches a predetermined value, the node being other than a node through which the first transistor outputs the laser diode driving current and a node through which the first transistor receives a reference signal; and

a thermistor with a negative temperature coefficient which sets the current that turns on the second transistor and increases the current as the ambient temperature of a laser diode increases.

7. The laser diode driving circuit of claim 6, wherein the thermistor has such a negative temperature coefficient that the current which turns on the second transistor changes as the ambient temperature of the laser diode changes, so that a maximum optical output power of the laser diode is maintained at a specific level independent of the ambient temperature of the laser diode.

8. A current limited laser diode driving circuit comprising:
a laser diode;
means for controlling an application of a driving current to the laser diode;
means for limiting the driving current output from the controlling means so as to increase a limit of the driving current as an ambient temperature of the laser diode increases.

9. The current limited diode driving circuit of claim 8, wherein the limiting means includes a thermistor responsive to ambient temperature that sets the operating current of a second transistor.

10. The current limited diode driving circuit of claim 9, wherein the controlling means includes a first transistor responsive to a second transistor that outputs a driving current to the laser diode when the first transistor is turned on.

11. The current limited diode driving circuit of claim 9, wherein the thermistor has a negative temperature coefficient so as to have a decreasing resistance as the ambient temperature increases.

12. A method for limiting the driving current applied to a laser diode comprising:
passing a current through a thermistor to provide an adjustable current;
if the adjustable current flowing through the thermistor is below a predetermined threshold, then providing the current to the laser diode through a first transistor;

if the adjustable current flowing through the thermistor is above the predetermined threshold, then using a second transistor to turn off the first transistor to prevent the current from reaching the laser diode.